JULY 1984

SOFTWARE CLUB

NEWSLETTER

Yes it's newsletter time again folks! "Yippee!" I hear you all shout as, after all this time, we have returned to drag you away from "FORTY NINER" for just long enough to read these words of wisdom.

We have had several claims for the high score for "FORTY NINER" the highest being a massive 269,841 but has to be disqualified because no proof was enclosed. Second was 187,864 by P Millington of Nuneaton signed by his Mum. What do you think lads and lasses should we accept this? Third, a long way behind - (but accompanied by a photograph!) comes Jonathon Moakes with 46,682. This has to be the official high score.

I have a question. After playing FORTY NINER for hours on end, battling to beat your personal best and knock your dad off the high score table, when you finally go to bed and are lying there in the dark ..... can you see little rats and gremlins walking across the ceiling? In the helpline section we report the case of Craig Jones' ZX81 that suddenly starts smoking for no apparent reason. We call in Sherlock Holmes to confiscate its cigarettes!

Your program this issue is well worth the effort of typing it in. Addictive and great fun - it will have you all on the edge of your seat!

You still refuse to write anything for the comments section except lavish praise for "FORTY NINER" so as punishment we are going to publish the longest soliloquy the subject we could find!

Plus more in the continuing saga of the machine code family. Will Reggie Register catch Auntie Accumulator using something she shouldn't in the hexadecimal patch? Or will Berti Bug take a byte out of a bit of binary before he gets the chance? Don't miss this latest instalment in which none of these questions will be answered!

Press Release - It's here at last! Rocket Man has arrived! Complete with pretty card insert and instructions. This program is a must for anyone who likes staring at the screen for hours until their brain gets soggy.
Also, we know that all you have ever wanted out of life is a cosmic cockerel T-shirt. Well guess what? Surprise! Surprise! See back pages.

HALL OF FAME

NEW FORTY NINER HIGH SCORE

FORTY NINER	187,864 (unofficial)	P. MILLINGTON
FORTY NINER	46,682 (Official)	JONATHON MOAKES
SUPER SCRAMBLE	31,000	DANIEL FOXMAN
GOBBLERS (LEVEL2)	26,710	RAYNOND GREENWOOD
ASTEROIDS (LEVEL2)	4,275	J. N. DOYLE
FROG HOPPER	8,640	RICHARD BENNER

Note: We have received claims of higher scores than some printed here - but unless they are supported by a photograph of the screen as evidence we cannot regard them as being authentic.

HELPLINE

Dear Cosmic Cockerel,

I am becoming increasingly worried about my beloved ZX81. My troubles started back at christmas, when I received a Sinclair 16k Ram Pack which didn't work. About a month later, Sinclair sent me another Ram Pack which seemed to work perfectly. At the start of February I bought a Dk'tronics cased Key board, and duly put the Ram Pack inside, (I had to take it out of its own case).

One day I was about to write a program when suddenly to my horror smoke started wafting through my key board, so I quickly took it apart and found that

My ZX81 only worked with the Ram Pack disconnected. This one was promptly sent back. They finally sent me a Cheetah 16K Ram Pack in about April, which I have now. It wouldn't fit in the back of the cased key board so I had to take it out of iys case and put it inside the cased key board. After about a week it started to hum, which I worried about so I wrote a letter to the makers. I still havn't had a reply. Now all data is lost. Sometimes this happens in the middle of a program for no apparent reason. What should I do?

Craig Jones. Weston -Super-Mare.

A The symptons described all seem to point to ogerheating. All electrical circuits give off heat and as electronic circuitry has been condensed more and more this has become an ever increasing problem. Compacting circuitry means that the level of heat which would normally have been produced over a large area now collects in a concentrated space and has to be dispersed much more efficiently in order to protect the components. These days it is common to see a micro-circuit the size of a pin-head mounted on a backing the size of a postage stamp just to dissipate the heat produced. By placing additional circuits into an already cluttered and probably inadequately ventilated case this problem is aggravated. (Just hold your ram pack after it has been on for a fair while to see the amount of heat that has been added to that already present in the case).

The cure is to remove the ram pack and try your system with everything outside the key board case. If this effects a miraculous cure then you should replace the ZX81 into the case but leave the ram pack out. Connecting it with a length of ribbon cable to the computer. This will keep it cool and completely eliminate any ram pack wobble into the bargain!

Dear Cosmic Cockerel,

Could you give me some information on a joystick interface for the ZX81 and tell me how much it would cost. Could you let me have some information about the joysticks that go with it and a rough estimate of how much both together would cost me. Would the joystick interface wobble like a ram pad and if so could you tell me how to stop it.

Mathew Wardley. Sheffield.

A We have had several enquiries concerning joysticks for the ZX81. Well we ahve some good news for you - there is still someone making interfaces. AGF produce one compatible with ZX81 for £9.95 (which use the cursor keys abd so can be used with FORTY NINER and ROCKETMAN just by selecting these keys on the program). Or a programmable interface (which can be altered to use any keys and so can be used with programs without the key select facility), but this costs £26.95.

These interfaces operate with any standard joysticks and AGF are offering Quickshot joysticks for £8.95 and Quickshot 11 (the one with the trigger) for £11.95 their address is

AGF HARDWARE,
FREEPOST,
BOGNOR REGIS
WEST SUSSEX
PO22 9BR

and a stamp is not required on your enquiry.

STEVAN ROBATHAN of BIRMINGHAM has sent in the following list of pokes which might come in useful:

1. POKE 16510,0 - sets first line of program to 0 so it cannot be edited or rubbed over.

2. POKE 16389,68 - sets up a minimal display for 16K users.

3. POKE 16389,76 - speeds up the slow mode but uses a great deal of memory.

4. POKE 16509.99 - similar to the BBC 'new'. Your program will cease to exist until you POKE 16509,0 where you will return to your program.

5. POKE 16418,0 - allows lines 22 and 23 to be printed on. (if using INPUT or SCROLL, you must restore a 2 into 16418 or a crash will occur)

YOUR PROGRAMS

GRAND NATIONAL

by Jonathan Riley, Isle of Wight

Bet your last pound on your favourite nag then watch with your heart in your mouth as they're off!! Egg your nag on after all you have everything riding on it - cheer it past the winning post and live to race another day. (every time I bet on one it seems to develop lead boots - Ed)

```
  1 DIM A$(2,6)
  2 DIM B$(2,6)
  3 DIM C$(2,6)
  4 DIM D$(2,6)
  5 LET M=100
  6 DIM X(4)
 10 LET A$(1)="
 20 LET B$(1)="
 30 LET C$(1)="
 40 LET D$(1)="
 50 LET A$(2)="
 60 LET B$(2)="
 70 LET C$(2)="
 80 LET D$(2)="
 85 POKE 16418,2
 90 PRINT AT 1,8;"YOU HAVE £";M
100 PRINT AT 5,5;"HOW MUCH DO Y
OU BET?";AT 7,12;"£";
110 INPUT B
120 IF B<1 OR B>M THEN GOTO 110
130 PRINT B
140 PRINT AT 10,5;"ON WHICH HOR
SE? (1-4)";AT 12,8;"HORSE NO. ";
150 INPUT H
160 IF H<1 OR H>4 THEN GOTO 150
170 PRINT H
180 FOR Z=1 TO 50
190 NEXT Z
200 CLS
210 POKE 16418,0
220 LET Y=0
230 FOR S=1 TO 4
240 PRINT AT Y,31;S
250 FOR T=1 TO 5
260 LET Y=Y+1
270 PRINT AT Y,31;"
280 NEXT T
290 LET Y=Y+1
300 NEXT S
302 FOR S=1 To 4
304 LET X(S)=0
306 NEXT S
308 FOR A=1 TO 2
310 PRINT AT 1,X(1);A$(A)
320 PRINT AT 2,X(1);C$(A)
330 PRINT AT 3,X(1);C$(A)
340 PRINT AT 4,X(1);D$(A)
350 PRINT AT 7,X(2);A$(A)
360 PRINT AT 8,X(2);B$(A)
370 PRINT AT 9,X(2);C$(A)
380 PRINT AT 10,X(2);D$(A)
390 PRINT AT 13,X(3);A$(A)
400 PRINT AT 14,X(3);B$(A)
410 PRINT AT 15,X(3);C$(A)
420 PRINT AT 16,X(3);D$(A)
430 PRINT AT 19,X(4);A$(A)
440 PRINT AT 20,X(4);B$(A)
450 PRINT AT 21,X(4);C$(A)
460 PRINT AT 22,X(4);D$(A)
470 FOR S=1 TO 4
480 IF X(S)=26 THEN GOTO 600
490 IF RND<.5 THEN LET X(S)=X(S)+1
```

```
500 NEXT S
510 NEXT A
520 GOTO 308
600 IF H<>S THEN GOTO 700
610 LET M=M+B
620 PRINT "WE HAVE A WINNER"
630 FOR S=1 TO 50
640 NEXT S
650 GOTO 85
700 LET M=M-B
710 IF M<>0 THEN GOTO 760
720 PRINT "YOU HAVE JUST LOST Y
OUR SHIRT"
730 IF INKEY$=""THEN GOTO 730
740 CLS
750 RUN
760 PRINT "NOBODY LOVES A LOSER
"
770 GOTO 630
```

YOUR COMMENTS

Okay you won't talk about anything else (probably with the exception of Rocketman once it's released) so here is a nice long letter from Mr Sleight of Doncaster singing the praises of FORTY NINER!

Dear Sirs,

After reading the review of your game Forty Niner for the ZX81, I just had to give it a try.

In Sinclair user it was given a Gilbert factor of 9, so I assumed it must be good.

Having been out and obtained it my son and I rushed home and loaded it, and first try it loaded, now that's worth 5 points to any tape on a ZX81. What greeted our eyes when the title came up can only be described as mind boggling, it was truly fantastic, my son spent 10 minutes shouting "look at the graphics".

After six months of watching little squares jumping about the screen you can imagine my surprise at seeing the Cosmic Cockerel.

Since buying the ZX81 last November I have become hooked on computing and although I'm unemployed I have been saving hard since then to buy a spectrum, but I must say the six pounds I took out of my savings was well worth the extra time I will have to wait until I can buy one.

I am even thinking of hanging on to the '81 so I can use Forty Niner as a yard stick to judge spectrum games by.

Could you please send me the catalogue of other software you have produced, and let me know if there are any more high resolution games for the ZX81. If so I may keep putting off that Spectrum for some time to come!

MACHINE CODE

In the last issue we covered a generalised view of the workings of a computer, so you should now know the difference between the C.P.U., R.O.M. and R.A.M. Also you should have an idea of the meaning of the terms Address, Byte and Bit.

To recap:

C.P.U.	= Central Processor Unit
R.O.M.	= Read Only Memory
R.A.M.	= Random Access Memory
BIT	= Binary Digit
BYTE	= Group of 8 Bits
ADDRESS	= Position of Bytes in memory

So, we know that the C.P.U. is the 'engine' of the computer the part that does all the work, and that R.O.M. and R.A.M. are simply places to store instructions to the C.P.U. or data to be manipulated, but what is Binary Digit (BIT) anyway?

Let's take the first question, and examine the way we naturally count in order to explain. We are all familiar with the term 'carry one' from very early on at school - but what does it really signify? For a start if we are going to count from 0 to say 100 without a carry we would need 101 different symbols (including0) in order to represent our numbers, and if we ever wanted to count higher we would have to invent a few more. Not a very practical system! No-one would be able to remember all the symbols - let alone which number each represents!

So pick a number! We normally count using base ten (or decimal) so the number already chosen in this case is ten. We limit ourselves to ten symbols (0-9) and as we count upwards towards nine we simply record "one lot of ten" and start again with 0. (Yes I know you can already count!)

Internally a computer has only two states OFF or ON (think of these as 0 or 1) and so has to count using a system where the base number is two, because it cannot represent any further symbols. (I know it prints decimal numbers on the screen but this is the result of a program and not at machine level.). This system is Binary and differs only in that it 'carries' earlier than decimal i.e. a carry equals 'One lot of two' instead of one lot of ten!

So How do we Count in Binary?

The same way as we count in decimal. Easy isn't it? Let's look at this 'carrying business a little closer. So far we have two columns, one representing 'one lot of ten' the other single units

$$\underset{1}{1} \times (10) + \underset{0}{(0)} = 10$$

Similarly, in Binary, we have the same format representing 'one lot of two' plus single units

$$\underset{1}{1} \times (2) + \underset{0}{(0)} = 2$$

So what happens in decimal when we have nine lots of ten and nine units and want to add one to it?

$$\underset{9}{9} \times (10) + \underset{9}{(9)} = 99 \quad +1$$

We now have ten lots of ten, so this is what our next column must represent (or one lot of ten times ten)

$$1 \times (\underset{1}{10} \times 10) + \underset{0}{0} \times (10) + \underset{0}{(0)} = 100$$

It then follows that the next column will represent 10 X 10 X 10 (or 1,000). So we can see that each column represents the last one multiplied by 10 - which happens to be the base number, so would the same apply to Binary? Yes of course it will. To illustrate let's count in Binary.

0 0 0 0 = 0
0 0 0 1 = 1

Now you will remember that our base number is two, so when we add one to our number now we must carry, as we have one lot of two.

$$1 \times (2) + (0)$$

0 0 1 0 = 2
0 0 1 1 = 3

Again a carry, but also a carry from the next column as that will also hold two. This gives us:

$$0 \quad \underset{1}{1} \times (2 \times 2) + \underset{0}{0} \times (2) + \underset{0}{(0)} = 4$$

$$0 \quad \underset{1}{1} \times (2 \times 2) + \underset{0}{0} \times (2) + \underset{1}{(1)} = 5$$

$$0 \quad \underset{1}{1} \times (2 \times 2) + \underset{1}{1} \times (2) + \underset{0}{(0)} = 6$$

$$0 \quad \underset{1}{1} \times (2 \times 2) + \underset{1}{1} \times (2) + \underset{1}{(1)} = 7$$

So we can now see that each column represents the last one multiplied by the base number (or 2 in this case) just the same as in decimal. As the second column always represents the base number itself, it follows that each successive column represents itself once more each time (or the base number raised to increasing powers)

If this is not completely clear go back and read it again - it may not be obvious at first but like roses - it grows on you!

So to convert a Binary Number into Decimal we simply need to know the value of the columns. As each column is valued at the last multiplied by 2 (the base number) it follows that each column represents double the last. So let's take the Binary Number:

```
256  128  64  32  16  8  4  2  1
1    0    1   1   0   1  1  0  1
```

and convert it into decimal. The columns represent:

```
256  128  64  32  16  8  4  2  1
1    0    1   1   0   1  1  0  1
```

So we can calculate the decimal equivalent by adding together all those that have a value.

```
256  128  64  32  16  8  4  2  1          256
1    0    1   1   0   1  1  0  1           64
                                           32 +
                                            8
                                            4
                                            1
                                          ----
                                          365
```

Therefore: Binary Decimal
101101101 = 365

In order to calculate the Binary Number from the Decimal, repeated divide by two. A remainder gives a Binary Digit of 1 otherwise a 0.

For instance the number 187 gives the following result:

```
187
  2
 93 REMAINDER 1
  2
 46 REMAINDER 1
  2
 23
  2 REMAINDER 0
 11 REMAINDER 1
  2
  5 REMAINDER 1
  2
  2 REMAINDER 1
  2
```

```
  1 REMAINDER 0
  2
  0 REMAINDER 1
```

Now read from the bottom, writing left to right so:

10111011

is the Binary equivalent of 187. Check it using the method previously described.

Until next issue here is some food for thought. Hexidecimal is simply another system which follows exactly the same proceedings as decimal and binary, except that its Base Number us sixteen. Because we do not have enough symbols to represent the numbers above 9 in one column A to F are used for the numbers 10 to 15. I shall leave you to work out, in the light of everything that I have just said, how to count in hexadecimal.

Now that you have a basic knowledge of Binary and hexidecimal we can go on to the machine code itself - the bit you have all been waiting for! You will remember that a byte is a collection of eight digits (i.e. it is a Binary Number eight digits long) - so what is the maximum number that a byte can represent? Come on- work it out using your new-found knowledge! This is important as a byte is the basic unit used for machine code programming, and you must become very familiar with the idea. In a similar way as the different codes produce different characters on the Television Screen each of the different numbers (or bit patterns) in a given Byte represent different commands to the C.P.U. and it is by giving the C.P.U. the right commands in the correct sequence that we program it. Machine code is NOT as horrendously complicated as is the general opinion.

In the next issue we will go on to see just how complicated Machine Code Programming isn't

PRESS RELEASE!

ROCKETMAN has arrived! finally and at last, Yippee! Whoopee! etc.

..... er ..... need we say anymore? apart from an order form is enclosed with this newsletter?

* * *

Be proud of being a Cosmic Cockerel. If you were impressed with 'FORTY NINER' then you will love to wear one of our Cosmic Cockerel T-shirst printed in bright red and shiny black they look really ..... luuverly! (oh and cheap! .... Get it? a cockerel? cheap..cheap? Not very good I know but the best you can expect this time of year!)

* * *

All members will between now and the next newsletter be receiving a new membership card. This will be based on the credit card idea - will be made of plastic and have the signiture strip just like the real thing. Also like the real thing - if you try

BACK PAGE

For a miniscule charge of 50p we can display any items for sale to an audience comprising entirely of ZX81 owners. In this issue we have the following items on offer:

Firstly some surplus programs from Simon Barnett.

1. BLACK CRYSTAL (CARNELL) ..... £5.50 SOLD
2. KRAZY KONG (PSS) £2.50
3. TAI (PSS) £3.25
4. (ARCTIC) GALAXIANS SWORD OF PIECE £3.00
5. INVASION FORCE (ARCTIC) £2.50
6. DAMPER GLOOPER (QS) £3.25
7. ALIEN DROP OUT (SUPER SOFT) £2.50
8. 10 GAMES - 1K (J-K GREYE) £1.00

Send cheque or postal order to us care of Cosmic Cockerel If someone has beaten you to the program of your choice and bought it before we receive your money please indicate whether you have a second choice or would like your money returned.

From Mr M Laster of Northampton we have the following items for sale:

16K ZX81 for sale, complete with approx 40 software tapes, ZX printer cassette case, books, magazines and joystick interface. All under guarantee and complete with packaging. Bargain at £100

Telephone 0604 410093 after 7 pm

All items advertised are from private individuals and are not part of a business. We take every care to ensure that any programs submitted for sale are original copies in the manufacturers original packaging.

155 Whiteladies Road Clifton
Bristol BS8 2RG
Telephone (0272) 731411
Telex 444742 AFMADV G

ORDER FORM

Name : .....

Address : .....

.....

.....

.....

.....

Software Farm Software Club No.: ..... (Members only)

GAME	PRICE EACH	QUANTITY	TOTAL AMOUNT
GOBBLERS	£4.50	.....	£.....
ASTEROIDS	£4.50	.....	£.....
FROG HOPPER	£4.50	.....	£.....
SUPER SCRAMBLE	£4.50	.....	£.....
FORTY NINER	£5.95	.....	£.....
ROCKETMAN	£5.95	.....	£.....

TOTAL : £.....

S.F.S.C. Members only - 50p Discount per tape £.....

TOTAL AMOUNT ENCLOSED : £.....

I hereby enclose a cheque/postal order for £.....

Signed : .....

Send this form to The Software Farm at the address shown above.

Principals: J N Chappell S C Green

AVAILABLE NOW!

NEW!!
SOFTWARE FARM T-SHIRTS!

ONLY
£2.50 Child
£3.00 Adult
(plus post & pack)

Have your very own **Cosmic Cockerel** T-Shirt - printed in bright red and black. Just what you need for these Tropical (?!?!?!!) British summers..... (Er.....Do you think we ought to produce a **Cosmic Cockerel** umbrella next?)